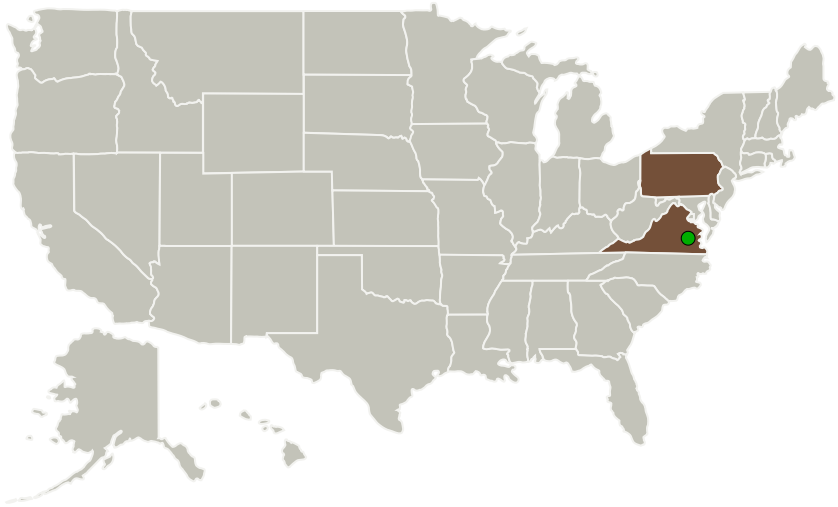
Weather Aware Route Planning (WARP), Phase I

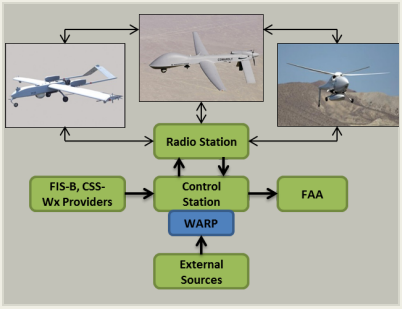
Completed Technology Project (2015 - 2015)

Project Introduction

In this SBIR project, Daniel H. Wagner Associates, Inc., will design and demonstrate the feasibility of a system for integrating environmental data into flight planning and execution for Unmanned Air Systems (UAS) in the National Airspace System (NAS). The Weather Aware Route Planning (WARP) system will provide weather-based Indicators and Warnings (I&W) and navigational recommendations for UAS in order to improve their autonomy, safety, and energy efficiency. Using all available environmental and navigational data, WARP will assess environmental impacts to planned/executing flight plans and generate alerts and recommendations for those plans based on expected environmental impacts. Operating within a ground-based control center, WARP will incorporate position and environmental data from existing and emerging Next Generation Air Transportation System (NextGen) sources. Using a combination of rules-based/heuristic and computationally-intensive approaches, WARP will assess environmental impacts to individual UAS flight plans and provide I&W and recommendations for each UAS to avoid negative environmental impacts and take advantage of positive environmental impacts. WARP will assist ground-based pilots, and eventually UAS autonomous controllers, in performing safer and more efficient flight.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Daniel H. Wagner Associates, Inc.	Lead Organization	Industry	Exton, Pennsylvania
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Pennsylvania	Virginia

Project Transitions

June 2015: Project Start

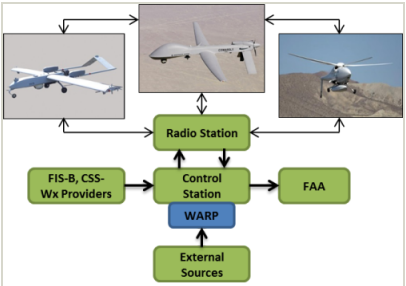
December 2015: Closed out

Closeout Summary: Weather Aware Route Planning (WARP), Phase I Project I mage

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/139431)*

Images



Briefing Chart Image
Weather Aware Route Planning (WARP), Phase I
(https://techport.nasa.gov/image/127389)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Daniel H. Wagner Associates, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

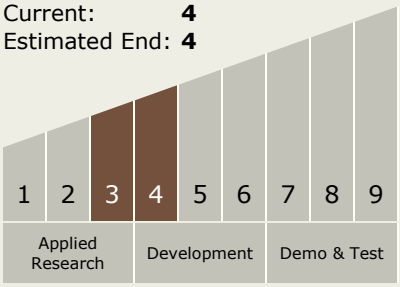
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
James Eanes

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.2 Reasoning and Acting
    - TX10.2.4 Execution and Control

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System